From Pilot **to Statewide**

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Moving Maine's LakeSmart from Pilot to Statewide: Lessons Learned

Situation/Background

Maine has a reputation for beautiful pristine lakes, clear blue waters, loons calling, and pointed firs framing the shores. But Maine lakes have been showing signs of declining water quality over the past 20 years. We are losing the clear water, the loons, and the pointed firs. Development has hit Maine, along with the polluted stormwater runoff that accompanies it.

Lawns are replacing the forested shorelines, mini malls are supplanting the back fields, seasonal camps are being converted into year-round homes, and miles of camp roads and ditches circle the lakes. Research shows levels of phosphorus runoff are five to ten times higher in the developed watersheds.

Maine lakes need a program to halt the tide of urban/suburban landscaping practices that have begun to circle our lakes and to encourage best management practices (BMPs): less lawn, effective buffers, erosion control, etc. In 2001, the Maine Department of Environmental Protection (DEP) staff began meeting with lake protection leaders from around the state to develop a new program.

Our goal was to make lake-friendly landscaping practices the norm on lakes throughout the state. We planned to change the norm by offering a program to encourage BMP adoption that incorporated rewards, recognition, and peer pressure to hasten the adoption.

Designing the program using social data. We used social marketing principles to help design our program. In particular, we used Doug McKenzie-Mohr's Behavior Change Matrix (with a few tweaks) to help us sort out the issues, audiences, solutions, etc. (*Fostering Sustainable Behavior: An Introduction to Community-based Social Marketing* by Doug McKenzie-Mohr, William Smith, 1999; New Society Publishers; see also, http://www.toolsofchange.com and http://www.cbsm.com/).

The matrix gives a framework for analyzing and prioritizing approaches. They require the user to look at very specific actions. For example, although the stakeholder group started with the broad category of lawn care, the matrix forced us to examine very specific actions for homeowners (e.g., grow less lawn, use less fertilizer, spoon feed lawn) (see Table 1). The matrix leads a reader through an analysis not only of what actions give the greatest bang for the buck but what realistically is likely to get implemented. Reducing lawn size, for example, would be good for water quality, but we've found few lawn aficionados willing to give up lawn. The matrix also helps figure out audiences, incentives and barriers, and outreach tools.

We decided our target audience was lakeshore residents and we left municipal code enforcement officers, lawn care companies, and building contractors for another time. We used the 2000 Maine Lake Users Survey, statewide quantitative phone surveys from 1996-2006 (which are posted on our Website: http://www.maine.gov/dep/blwq/doceducation/nps/outreach.htm), and our experience to characterize our audience as "concerned but lacking knowledge on cause and effect, looking for easy fixes, retired."

After creating multiple matrices representing many options, we decided to offer a comprehensive program focused at changing landscaping, yard care, and structural housekeeping practices of shorefront residents. The program would offer

- free workshops to train residents in good practices;
- site visits by trained and neutral third parties (usually Soil & Water Conservation District staff) to evaluate properties and offer advice on specific BMPs to fix erosion and polluted stormwater runoff problems; and
- awards (signs) for good land use practices both as an incentive and to increase visibility of the program and the homeowners' new practices.

The Behavior Change matrices also helped us decide which BMPs to evaluate during the site visits. We picked the ones that would make the greatest impact on the lake regardless of how easy they would be to implement (e.g., reducing amount of lawn, creating buffers, replacing old septic systems). But we also included easier but more palatable ones that people might adopt more easily (e.g., reducing the amount of fertilizer/pesticides, pumping septic tanks, fixing chronically eroding areas). The reason for easier BMPs was to encourage our target audience to feel that they were lake conservationists and then it would be easier to motivate them to undertake more difficult practices.

As with any program we needed a name, slogan, and logo. We tested various names and slogans before selecting "LakeSmart: Living lightly on the land for the sake of our lake." Offering several names and designs, we asked potential audiences for feedback. We used e-mail to individuals and mini focus groups of lake property owners at meetings to get responses to a series of questions relating to the name, logo, and the design

Table 1. Example of Behavior Change Matrix for the Creation of an Effective Social Marketing Campaign (Lawn Care).

General description of the area of concern? Homeowner purchases of lawn (turf) products that contain pesticides, fertilizers, or both doubled in Maine from 1994 thru 1999. Trends in residential sprawl, increased retailers including big-box outlets and aggressive marketing/advertising by manufacturers in an environment of little regulatory oversight of at-home applicator behavior invite risk to state waters. Further, storm-event surface water monitoring efforts by Friends of Casco Bay have detected several pesticides and all three major nutrients in freshwater swales adjacent to residential developments that feed directly into Casco Bay.

What are the components that make up the area of concern? List and then fill out the following table.

Component:

Activity (Specific behaviors/ activities that people could do).	*Competing Behaviors* What do people currently do? Use focus groups or observations.	*Impact* Identify & quantify the impact each positive activity has on water x what programs have been the most effective in getting people to adopt the behavior = cumulative impact.	*Barriers* What will stand in our way of getting people to do what we would like them to do?	*Perception* Check the accuracy of people's perceived barriers to change. Use focus groups.	*Benefits* Benefits from the new/desirable behavior or how to make the competing behavior less desirable.	*Type* One time activity or repetitive?	*Tool or Action* PSA/ Activity/ Workshop/ Brochure/ Demonstration/ Partnership Message crafting
Grow less turf	Turf fills property, boundary to boundary. People like lawns for recreation and just for looks. Turf seen as "clean" look to property; tidiness	Impact on water quality? LakeSmart has achieved ~ 40% success in getting shorefront folks to lessen lawns and instead plant buffers (which is higher than those away from the shoreline).	Folks unaware of alternatives in landscape/horticulture design. Have landscaped once – don't intend to do it again.	Alternatives are for "green thumbs" only. But be careful how tell them less lawn – our focus groups (04) thought we meant pave more. One of the hardest practices to get people to do (LakeSmart survey 07).	Less turf = less chemicals, less lawn mowing, less time, labor in general.	One-time installation of aesthetically and environmentally sound groundcover, shrubs, trees suited to site and climate demands minimal (but not zero) care.	Show them what a limited lawn looks like – demonstrations. An isolated message suggesting one should dispatch their lawn is of little use.
Use: good management: proper watering (1-1 ½"/week); mow high (set blade 2 1/2- 3"); mow frequently; leave clippings; sharpen blade; thatch and aerate in fall	Mow short and water frequently. Bag clippings because they cause thatch and neater appearance.	Impact? Yardscaping and Bayscaping	Folks have been doing yard care since kids – know how to do it. Need to keep up with neighbors. Shorter is neater. Can't let lawn brown up (go dormant) in summer.	Some believed that lawn needs to be short like golf green. Important to keep up neighborhood standards – ask neighbors for advice. Not asking questions of any experts. (New England CES survey 08).	These actions interconnect. Followed thru properly, turf becomes vibrant, less stressed and less vulnerable to weed problems. Fertilizer needs alone are halved simply by mowing properly, returning clippings to lawn.	Routine, repetitive	Easy-to-read/follow guide, that's visible. Say as decal-sticker for lawn mower, fertilizer bag closure, point of sale, or laminated checklist. Currently project underway by New England CES.
Use pesticides/fertilizers only when needed (September in Maine) and in amounts only as required. Maine soils are rich in phosphorus – don't need to add it.	In Maine ~1/3 of homeowners don't fertilize, 1/3 fertilizer 1-2 times/year and 1/3 fertilize 3-5 times/year. (Municipal Employees survey 04)	Impact? Dept. of Ag – Board of Pesticide Control – "Think First, Spray Last" program. New law in Maine that requires signs in stores selling fertilizer that discourage use of fertilizers containing phosphorus for lawns seems to be ~30-50% effective in reducing phosphorus fertilizer (qualitative analysis so far).	Habit of fertilizing. Risk to environment and people are not recognized, so what's the problem? Also, saying "buy less" isn't good for business, especially for big-box retailers. ~50% of Mainers don't think or don't know that stormwater leaves their yard (Municipal employees survey 04)	~30% of Mainers don't recognize weed and feed products as having pesticides. Most folks ignore/don't care that herbicides are pesticides. Fifteen percent of respondents to a 1994 BPC survey who said they never use pesticides listed herbicides as products they routinely apply around the yard. Most people don't think about affect on water quality unless in sight of water (focus groups 07).	Save consumers from wasting money. Also, reduce opportunities for accidents involving pesticides and children, spills, and eventual household waste collection program costs for unused products. Make lawns safe for pets and children.	Repetitive. Folks forget and return to old habits.	TV and radio ads Easy-to-read/follow guide, that's visible. Say as decal-sticker for lawn mower, fertilizer bag closure, point of sale, or laminated checklist. Currently project underway by New England CES. Link to water quality of a local water body (New England CES survey 08).

Figure 1. The LakeSmart sign.

Figure 2. The LakeSmart sign in location. Photo: Laura Wilson.

for the award sign. We did not ask what name or design they liked best but what message they got from the samples we offered. This process took many months with numerous revisions. Also, we thought we wanted to use signs to make the "new" social norm visible, so we checked with our audience first to see if they thought it was a good idea. We found that homeowners embraced the idea of posting a visually appealing sign on their properties.

As DEP and other lake protection experts field-tested our site evaluation form, we decided four categories would be scored: Road, Driveway, and Parking Areas; Structures and Septic System; Lawn, Recreation Areas, and Footpaths; and Shorefront and Beach Areas. In order to get the LakeSmart Award and sign, the property needs to pass all four categories. If a property is not ready for an award, it usually passes one or more categories and DEP sends recognition certificates and recommendations with the follow-up letter to property owners.

In 2003, we began to publicize LakeSmart and hold workshops. Anyone who attended a workshop and wanted a shorefront property evaluation, as well as anyone else who requested an evaluation, got one. Trained conservation district staff (contracted by DEP) responded to individuals' requests for evaluations, using the survey form that the stakeholder group developed. Awards, recognitions, and advice on BMPs were given out and LakeSmart signs began to appear around the shorelines. By the spring of 2006, the pilot phase for LakeSmart consisted of 17 lakes that had at least three evaluations on each plus a number of other lakes with only one or two evaluations, spread out across much of southern Maine.

Figures 3. A model LakeSmart property and our first award winner. Photo: Laura Wilson.

Figure 4. This homeowner did the best with an old property built before the 100 foot zoning set-back by allowing the natural vegetation to grow in around the house, using several BMPs for erosion control and drastically reducing her lawn area. Photo: Christine Smith.

Evaluation and Measuring Results

After running the program as a pilot for two years, we had many more requests from lake associations and individuals to participate in the LakeSmart program than we could service. It was time to evaluate the program. We looked at process, impact, and context assessment. We did phone surveys, mail surveys, interviews, and mini focus groups to collect data to evaluate the various components. When the evaluation was complete, we discovered ways to improve the program, trim costs, and raise efficiencies.

Evaluation of the program questions. Initially, we were concerned with the effectiveness of our workshops beyond the traditional "end of workshop" evaluation form. People generally stated the workshops were good and helpful. We knew our *process indicators*: the number of workshops and attendees and the number of property evaluations.

We were doing okay by our initial objectives, though low on numbers of workshop participants, especially considering the relatively large expense of putting on these six-hour workshops. Were we spending our money and our participants' time wisely? Besides educating one or two dozen people per workshop, how many site visits/evaluations of lake watershed properties could be attributed to the workshop? How many people actually changed their behavior and/or installed a Best Management Practice that was taught in the workshop? We realized that we needed to pay attention to the *impact evaluation*: the number of people who actually did something as a result of the program. We analyzed the database of evaluations and workshop attendance. It seemed that sometimes the workshop promoted the program (generated requests for evaluations), but sometimes the workshop didn't result in a flurry of evaluations. There were also lakes in the program where only one person or nobody had attended a workshop but we still had requests (often a lot) for evaluations. So what was most critical in getting people to take action?

Another question was how to use the Social Diffusion theory (Rogers 2003) to our advantage. We would aim for 15 percent of the lakeshore community to adopt the program and hoped this would be enough momentum to carry the message to other lakeshore residents and eventually to those in the watershed? For this to work, we needed 15 percent of homeowners to be LakeSmart by embracing the landscaping BMPs. Furthermore, lake friendly practices needed to be visible and highlighted by the LakeSmart sign. Thus, we arrived at our new objective – 15 percent of lake watershed properties on a project lake will be LakeSmart and have LakeSmart signs. To meet this new objective, we had to consider *context evaluation*: who is responding, who is getting awards, why others are not, what support is needed, why are some lakes successful and others not?

We also wondered what BMPs were most and least likely to be used? Did we need to reduce the number of practices that we were evaluating and focus only on a few key practices?

To be able to answer the impact and context evaluation questions, we undertook some market research and analysis. We did a phone survey of those who had registered for workshops – whether they attended or not. The survey asked if they had learned something new, if they had implemented a new BMP, if they needed more support and what type of support. If they hadn't attended, why not and what would be an incentive to do so? It also asked questions about the person's involvement in other lake-oriented activities and how much time they spent at the lake. We also did a paper survey to lake associations to determine what type of training they wanted, when, where, and what might be incentives. We interviewed the third-party evaluators and the local lake association contacts to get their perspectives on what worked and what didn't. And most recently, we sent a mail survey to everyone that had a property evaluation to see what actions, if any, they had taken and what would be helpful if they hadn't acted yet.

Results of the research. Our analysis showed that up to a year later, 72 percent of people who attended a workshop could describe something new they learned and 83 percent reported or were observed to have installed BMPs. But people preferred a much shorter workshop and closer to home. Did we need the workshop? In the beginning, the workshop was also a marketing tool. Once the program became known, it seemed an expensive way to educate a small group of people. We found that workshops did not necessarily move people to action. (Education and/or knowledge do *not* always result in action.) For some lakes, no workshop was necessary; for example, at one lake, a brief presentation at the lake association meeting was enough to generate 12 requests for evaluations on a lake with 54 houses. Two years later, that lake

had reached the objective of 15 percent LakeSmart.

We also wanted to know what motivated folks to improve their yard care to more lake-friendly practices. We needed to look more closely at context evaluation to determine what factors we could attribute to behavior change, specifically why LakeSmart was popular in some areas and not in other areas. This is what we learned:

- Lake associations that were most successful had a member that was a "sparkplug" to kindle interest and action among members.
- Their board members were willing to be leaders.
- The group offered some incentive/ support to members.
- The property evaluators were very important and not just for the process of completing evaluations in a timely and efficient manner. They helped reinforce the need for BMPs, gave concrete suggestions for improvements, and sometimes became the sparkplug who promoted the program.
- Pumping or fixing malfunctioning septic systems (70 percent) and erosion problems (68 percent) were the most frequently corrected problems. The least likely to be fixed included reducing lawn size (40 percent) and stabilizing the shoreline (17 percent). We found the barriers to fixing problems most frequently included the cost involved in the project, followed by the idea that the project wasn't necessary or the property owner didn't want to give up the lawn, need for extra parking. Occasionally, they didn't understand how to fix the problem or couldn't find the right materials. What the respondents thought would be most helpful in getting them to the LakeSmart Award was technical assistance, funding, and materials (see Table 2).

Table 2. Compilation of LakeSmart Survey Results.*

Action or problem area	*Was this a problem?*	*Corrected after LakeSmart evaluation*	
Fix eroding areas in driveway or parking area	Yes 41	Yes 32	No 5
Divert roof runoff into stable vegetated area or infiltration well	Yes 24	17	6
Maintain septic system or connect to sewer	Yes 6	4	0
Define and limit recreation areas in yard	Yes 13	5	4
Stabilize any eroding areas in yard	Yes 38	26	7
Establish stable winding path to lake	Yes 25	11	8
Establish, enhance or protect shoreline buffer	Yes 42	22	11
Stabilize shoreline	Yes 24	4	8

* Note: *284 surveys sent out; 135 returned. The second and third columns don't always add up to the number in the first column as they should if everyone replied to all questions. Sometimes the correction was in progress, sometimes the respondent marked that it was a problem but not whether they had fixed it.*

Lessons Learned and Applied

Rather than following a shotgun approach to expanding statewide, we have decided to focus on lakes that meet what we consider key elements for success. Instead of responding to requests for evaluations anywhere, we only pay for evaluations on "project lakes." To get accepted into the program as a project lake, lake associations must apply through a process that addresses these key elements. Here are examples of what our application requires:

1. A minimum three-year commitment from the lake association to promote LakeSmart and to achieve a minimum of 15 percent LakeSmart Award properties in those three years.
2. A local "sparkplug" to help promote the program and someone else to schedule evaluations.
3. An active lake association, as demonstrated by projects, educational programs, newsletters, and/or Website.
4. No other big projects going on around the lake that would be competition for their attention and energy.
5. To overcome some of the barriers we found to owners fixing problems on their properties, we give extra credit to a lake association willing to offer incentives (some form of matching grants, free plants, discounts at nurseries, pledge forms, or Youth Conservation Corps – high school students who supply inexpensive labor for homeowners who buy the materials).
6. A high percentage of shorefront property owners are members of the lake association.
7. Support from the local Soil and Water Conservation District or similarly qualified neutral organization with personnel willing to be the trained LakeSmart evaluators.

We realized the expensive workshops were no longer necessary. Instead, DEP or evaluators give presentations at lake association meetings to promote the program, and we offer associations that are accepted into the program a shortened workshop called "LakeSmart Walk 'N Talk." This is a two-hour tour of two properties to familiarize the attendees with the evaluation process and explain how the BMPs protect water quality.

The ensuing informal discussion allows homeowners to ask questions and begin to problem solve for their own property in preparation for their evaluation and possible award. The walking and observing real landscaping problems and solutions is more fun than sitting inside looking at slides. The measurable objective for this training is that 75 percent of Walk 'N Talks participants will take action – either requesting an evaluation or implementing a BMP within two years.

There has been an annual review of the form evaluators use on the site visit in an effort to cover the many types of properties most equitably. Although some practices are more frequently adopted by homeowners than other BMPs, we have decided to continue offering the full suite of yard and structure BMPs to address different problems and situations.

Other Lessons Learned as Byproducts of Our Evaluation

On large lakes, a more narrow focus on road associations (a formal or informal group of landowners who join together to maintain their private road) is more effective. You can reach the tipping point of 15 percent of a community sooner if there are lots of signs in that area. People take notice if they see three or four signs on one road as opposed to one sign here and another sign a mile away. So, we encourage large lakes to focus on implementing LakeSmart through the road associations or on a portion of the lake, e.g., a bay, south end, or some other geographic or cultural unit that makes sense for that lake.

Competition is a driving force for some. We heard about friendly competition between road associations on one lake and between lake associations statewide to see who had the most awards. We don't encourage competition, but we drop a few hints that it works in some places.

The follow-up phone surveys acted as prompts/reinforcement for the program. It reminded participants of their original plans and gave us a chance to offer support or suggest an evaluation. Now we tell participants at presentations and evaluations that we will call them in a year to see how they are doing and if they need help.

What's Next?

We will continue to do all the types of evaluation as the program grows and presents us with new and exciting challenges. Such intensive assessment takes a lot of time but we plan to complete another assessment in three to five years as the program evolves. It has been rewarding to see the enthusiasm of our lakeshore audience making these lake-friendly behavior changes. The lakes in Maine are eternally thankful to all homeowners, evaluators, and stakeholders who have made LakeSmart a success.

More information about the LakeSmart program can be found at http://www.maine.gov/dep/blwq/doclake/lakesmart/index.htm.

References

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Christine Smith worked at Maine DEP as the Lakes Education Coordinator for the last nine years. In those years she collaborated often with Barb Welch in the development of several outreach programs: LakeSmart, watershed protection grants for grades 6-12, Lake Education Days for schools and summer camps, and the promotion of phosphorus-free fertilizer culminating in 2007 legislation requiring stores to post a sign warning of the water quality impact of phosphorus in lawn fertilizer. Christine can be reached at chrisbradsmith@gmail.com.